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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 208761/FV/pa	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/NL 03/00594	International filing date *(day/month/year)* 22.08.2003	Priority date *(day/month/year)* 23.08.2002
International Patent Classification (IPC) or both national classification and IPC C04B28/26		
Applicant MODINA B.V. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
22.03.2004	20.01.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Théodoridou, E Telephone No. +31 70 340-2629

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL 03/00594

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-7 as originally filed

Claims, Numbers

1-13 received on 22.11.2004 with letter of 18.11.2004

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-7, 9,13
	No:	Claims	8, 10-12
Inventive step (IS)	Yes:	Claims	1-7
	No:	Claims	8-13
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Documents

1. Reference is made to the following documents:
   D1: US-A-5 714 000 (WELLEN GREG R ET AL) 3 February 1998 (1998-02-03)
   D2: DE 32 44 523 A (HENKEL KGAA) 7 June 1984 (1984-06-07)
   D3: CHEMICAL ABSTRACTS, vol. 88, no. 2, 9 January 1978 (1978-01-09), Columbus, Ohio, US; abstract no.: 11073u, XP0000063196
   D4: FR-A-2 130 680 (SHIMIZU KEISUKE) 3 November 1972 (1972-11-03)
   D5: US-A-3 933 514 (BANKS ET AL.) 20 January 1976 (1976-01-20)

2. **Novelty and Inventive step ; Claims 1-8**

2.1 The present application meets the criteria of Article 33(1) PCT, because the subject-matter of claims 1-7 is new in the sense of Article 33(2) PCT.

2.2 D1 relates to a method of making a rigid silicate-foam comprising activated carbon particles by supplying compressed air or nitrogen into a high shear mixer. The technical features relating to the mixer as recited in claim 1, having as effect the intense mixing of the silicate are not disclosed in D1.

2.3 The document D5 discloses a silicate foam that is fire resistant, has insulation properties and is also water resistant. Such a foam is prepared (see column 10, example IV) in a pressurized foam mixer, comprising a stainless steel cylinder with a conical bottom and a removable pressure tight top. A mixer shaft passes through a gas pressure sealing gland in the mixer top. The shaft is driven by an electric motor and operates a combination propellor-open paddle mixing blades in the vessel. Gaseous ingredients are added to the aqueous silicate mixture and then the vessel is pressurised. An evacuation hose allows for withdrawal of the foam. The foam comprises also various additives and fillers including surfactants.
The mixer according to D5 differs from the tubular mixer with internal obstruction

means disclosed in claim 1 of the present application.
Consequently the subject matter of claims 1-7 is new (Art.33(2)) .

2.4 There is no indication in any of the cited documents disclosing silicate foams and

especially in D5 which is considered

to be the closest prior art, that would lea

dthe skilled person to a method for preparar

ingasilicatefoamusingthestepsandmix

erasdisclosedinclaim1.

Consequently the subject matter of claims 1-7 involves an inventive step (Art. 33(3))

2.4 In as far as claim 8 is concerned, wherein a foam is defined in terms of the process by which it is made, the claim is construed as a claim to the foam per se that possesses the characteristics derived from the manufacturing process stated in the claim. A product is not rendered novel merely by the fact that it is produced by means of a new process. (see PCT/GL/ISPE/1 A5.26[1]).
Document D2 discloses a foam based on alkali metal silicates. Such foams exhibit high temperature stability, foam stability (defined in terms of fresh , unhardened foam, see page 11, criterium 2, lines 24-34) and have a fine pore structure.
Document D5 discloses a high strength silicate foam, The viscosity and other properties can be modified with the use of additves, according to the application.

The applicant stipulates that the foam produced by the process of claim 1 is a *strong and full foam*. There is however no evidence of any technical characteristics relating to this foam, that could distinguish it from the silicate foams of D2 and D5 or that could provide further points of view to the patentability of claim 8.

3. Independent claims 9-13

3.1 The independent claims 9-13 refer to preferred uses of the foam of claim 8.
D2 discloses a a silicate foam that displays temperature stability and heat insulating properties. D5 discloses a high strength , fire resistant, insulating and water resistant silicate foam, which can be used by itself or fabricated with reinforcing.
In view of the teachings of D2 and D5 and the fact that the foam of claim 8 is not novel, claims 10-12 are not new and do not involve an inventive step according to Art.33(2) and (3) PCT.

3.2 Furthermore D4 discloses an incombustible panel formed by impregnating a sheet of non-woven fabric made of fibre material with a foamable silicate solution, which additionally serves as an adhesive causing the sheets to adhere to each other.
In view of the teachings of D4 and the fact that the foam of claim 8 is not novel, one cannot realise nor has it been submitted in a convincing manner as to why claims 9 and 13 could provide further points of view to the patentability of the application.

CLAIMS

1. A method of preparing a silicate-based foam, characterized in that silicate is supplied to a mixer under pressure, to which mixer also a carrier gas is supplied under pressure, with intense mixing of the silicate and the carrier gas being effected in the mixer, after which a foam of carrier gas and silicate is delivered via an outlet opening of the mixer, and

2. A method according to claim 1, characterized in that the carrier gas is selected from a group consisting of oxygen, nitrogen, air, carbon dioxide and carbon monoxide, or a combination of one or more thereof.

3. A method according to claim 2, characterized in that air is used as the carrier gas.

4. A method according to any one or more of the preceding claims, characterized in that sodium silicate is used as the silicate.

5. A method according to any one or more of the preceding claims, characterized in that one or more additives selected from the group consisting of surfactants, colorants, aromatics, foam stabilising agents, cleaning agents, fire resistance-increasing agents, insecticides, acids and bonding agents are added to the silicate.

6. A method according to claim 5, characterized in that one or more surfactants are used.

~~7. A method according to any one or more of the preceding claims, characterized in that~~ the mixer is tubular

~~8. A method according to any one or more of the preceding claims, characterized~~ in that the mixer is internally provided with obstruction means, which effect an intense mixing of silicate and carrier gas.

7. A method according to any one of the preceding claims, characterized in that the metering of silicate takes place downstream of

wherein

the location where the metering of the carrier gas takes place.

8 ~~10.~~ A foam obtained by carrying out the method as defined in any one or more of the preceding claims.

~~11.~~ A foam with a base of a carrier gas and a silicate.

~~12.~~ A foam according to claim 11, characterized in that the carrier gas has been selected from the group consisting of oxygen, nitrogen, air, carbon dioxide and carbon monoxide or a combination of one or more thereof.

~~13.~~ A foam according to claim 12, characterized in that air is used as the carrier gas.

~~14.~~ A foam according to any one or more of the preceding claims 11-13, characterized in that sodium silicate is used as the silicate.

~~15.~~ A foam according to any one or more of the preceding claims 11-14, characterized in that the foam furthermore contains one or more additives selected from the group consisting of surfactants, colorants, aromatics, foam stabilising agents, cleaning agents, fire resistance-increasing agents, insecticides, acids and bonding agents.

9 ~~16.~~ Use of a foam according ~~to any one or more of the preceding claims~~ 8 ~~10-15~~ as an adhesive.

10 ~~17.~~ Use of a foam according ~~to any one or more of the preceding claims~~ 8 ~~10-15~~ as a fire retardant.

11 ~~18.~~ Use of a foam according ~~to any one or more of the preceding claims~~ 8 ~~10-15~~ as a moisture repellent.

12 ~~19.~~ Use of a foam according ~~to any one or more of the preceding claims~~ 8 ~~10-15~~ as a binder.

13 ~~20.~~ Use of a foam according ~~to any one or more of the preceding claims~~ 8 ~~10-15~~ as an impregnating agent.